

WHAT IS CLAIMED IS:

1. An optical disk comprising a first substrate having a signal area on a principal plane and a central hole A and a second substrate that is  
5 transparent and attached to the first substrate,  
    wherein the second substrate is thinner than the first substrate and has a central hole B whose diameter is larger than that of the central hole A, and  
    the first substrate and the second substrate are attached to each other  
10 with an adhesive member disposed therebetween so as to extend at least from an inner peripheral edge of the second substrate to an outer peripheral edge thereof.
2. An optical disk according to claim 1, wherein the adhesive member is  
15 radiation curable resin.
3. An optical disk according to claim 1, wherein a thickness of the second substrate is in a range of 0.03 mm to 0.3 mm.
- 20 4. An optical disk according to claim 1, wherein the central hole B is larger than a clamp area of the optical disk.
5. An optical disk according to claim 1, wherein the adhesive member is disposed on an outer peripheral side of a clamp area or disposed so as to cover  
25 the entire clamp area.
6. An optical disk according to claim 1, wherein a thickness of a clamp area of the first substrate is in a range of 1.1 mm to 1.3 mm.
- 30 7. An optical disk according to claim 1, wherein the first substrate includes, on the principal plane, at least one selected from the group consisting of a convex portion formed in a circular shape so as to surround the central hole A and having an outer diameter equal to or smaller than a diameter of the central  
35 hole B, and a concave portion formed in a circular shape so as to surround the central hole A and having a diameter equal to or smaller than the diameter of the central hole B.

8. An optical disk according to claim 7, wherein a height of the convex portion is larger than a sum of a thickness of the second substrate and a thickness of the adhesive member.
- 5 9. An optical disk according to claim 1, wherein an average thickness of the adhesive member is in a range of 0.5  $\mu\text{m}$  to 30  $\mu\text{m}$ .
- 10 10. An optical disk according to claim 1, wherein the optical disk is adapted for reproduction of information by application of a laser having a wavelength of 450 nm or less.
- 15 11. A method for producing an optical disk including a first substrate having a central hole A and a second substrate that is transparent and has a central hole B whose diameter is larger than that of the central hole A, comprising the processes of:
- (a) bringing the first substrate having a signal area on a principal plane and the second substrate that is thinner than the first substrate into contact with each other with radiation curable resin interposed therebetween so that the principal plane faces inside; and
- 20 (b) irradiating the radiation curable resin with radiation to cure the radiation curable resin, thereby attaching the first substrate to the second substrate,
- wherein, in the process (a), the radiation curable resin is disposed so as to extend at least from an inner peripheral edge of the second substrate to
- 25 an outer peripheral edge thereof.
12. A method for producing an optical disk according to claim 11, wherein a thickness of the second substrate is in a range of 0.03 mm to 0.3 mm.
- 30 13. A method for producing an optical disk according to claim 11, wherein the process (a) includes interposing the radiation curable resin between the first and second substrates, and rotating the first and second substrates to draw the radiation curable resin.
- 35 14. A method for producing an optical disk according to claim 11, wherein the process (a) includes pouring the radiation curable resin onto the first substrate, rotating the first substrate to coat the first substrate with the

radiation curable resin, and bringing the first substrate and the second substrate into contact with each other with the radiation curable resin interposed therebetween.

5 15. A method for producing an optical disk according to claim 14, wherein, in the process (a), the first substrate and the second substrate are brought into contact with each other in a vacuum atmosphere.

10 16. A method for producing an optical disk according to claim 11, wherein the first substrate includes, on the principal plane, at least one selected from the group consisting of a convex portion formed in a circular shape so as to surround the central hole A and having an outer diameter equal to or smaller than a diameter of the central hole B, and a concave portion formed in a circular shape so as to surround the central hole A and having a diameter  
15 equal to or smaller than that of the central hole B.

17. A method for producing an optical disk according to claim 16, wherein a height of the convex portion is larger than a sum of a thickness of the second substrate and a thickness of the radiation curable resin.  
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18. A method for producing an optical disk, comprising the processes of:  
(A) bringing a first substrate having a signal area on a principal plane and a central hole A and a second substrate that is transparent and thinner than the first substrate into contact with each other with radiation curable  
25 resin interposed therebetween so that the principal plane faces inside;

(B) irradiating the radiation curable resin with radiation to cure the radiation curable resin, thereby attaching the first substrate to the second substrate; and

(C) removing a part of the second substrate to form a central hole B  
30 whose diameter is larger than that of the central hole A in the second substrate,

wherein, in the process (A), the radiation curable resin is disposed so as to extend at least from an outer periphery of a position where the central hole B is formed to an outer peripheral edge of the second substrate.  
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19. A method for producing an optical disk according to claim 18, wherein a thickness of the second substrate is in a range of 0.03 mm to 0.3 mm.

20. A method for producing an optical disk according to claim 18, wherein the process (A) includes interposing the radiation curable resin between the first and second substrates, and rotating the first and second substrates to draw  
5 the radiation curable resin.

21. A method for producing an optical disk according to claim 18, wherein the process (A) includes pouring the radiation curable resin onto the first substrate, rotating the first substrate to coat the first substrate with the  
10 radiation curable resin, and bringing the first substrate and the second substrate into contact with each other with the radiation curable resin interposed therebetween.

22. A method for producing an optical disk according to claim 21, wherein, in  
15 the process (A), the first substrate and the second substrate are brought into contact with each other in a vacuum atmosphere.

23. A method for producing an optical disk, comprising the processes of:  
(i) opposing a first substrate in which a central hole A with a diameter  
20  $d_A$  is formed to a second substrate in which a central hole B with a diameter  $d_B$  is formed with radiation curable resin interposed therebetween so that a center of the first substrate is aligned with a center of the second substrate; and  
(ii) irradiating the radiation curable resin with radiation to cure the  
25 radiation curable resin,  
wherein  $d_A < d_B$ , and a thickness of the second substrate is in a range of 0.03 mm to 0.3 mm.

24. A method for producing an optical disk according to claim 23, wherein, in  
30 the process (i), the center of the first substrate is aligned with the center of the second substrate by using a pin that fits in the first and second central holes A and B.

25. A method for producing an optical disk according to claim 24, wherein the  
35 process (i) comprises the processes of:  
(i-1) fixing the second substrate on a table in which the pin is disposed so that the pin is inserted into the central hole B;

(i-2) pouring the radiation curable resin onto the second substrate;  
(i-3) moving the first substrate so that the pin is inserted into the central hole A, thereby opposing the first substrate to the second substrate with the radiation curable resin interposed therebetween; and  
5 (i-4) rotating the first and second substrates to draw the radiation curable resin.

26. A method for producing an optical disk according to claim 25, wherein the pin includes a first pin that fits in the central hole A and a second pin that fits  
10 in the central hole B,

in the process (i-1), the second substrate is fixed with the second pin,  
and

in the process (i-3), the first substrate is fixed with the first pin.

15 27. A method for producing an optical disk according to claim 26, comprising, after the process (i-1) and before the process (i-2), lowering an upper surface of the second pin below an upper surface of the second substrate.

28. A method for producing an optical disk according to claim 26, wherein the  
20 second pin has a cylindrical shape, and the first pin is inserted into the second pin.

29. A method for producing an optical disk including a first substrate in which a central hole A with a diameter  $d_A$  is formed and a second substrate in which  
25 a central hole B with a diameter  $d_B$  is formed, comprising the processes of:

(I) coating at least one substrate selected from the group consisting of the first substrate and the second substrate with radiation curable resin;

(II) opposing the first substrate to the second substrate with the radiation curable resin interposed therebetween in a vacuum atmosphere so  
30 that a center of the first substrate is aligned with a center of the second substrate; and

(III) irradiating the radiation curable resin with radiation to cure the radiation curable resin,

wherein  $d_A < d_B$ , and a thickness of the second substrate is in a range  
35 of 0.03 mm to 0.3 mm.

30. A method for producing an optical disk according to claim 29, wherein, in

the process (II), the center of the first substrate is aligned with the center of the second substrate by using a pin that fits in the first and second central holes A and B.

- 5     31. A method for producing an optical disk according to claim 30, wherein the process (II) includes the processes of:

          (II-1) fixing the second substrate on a table in which the pin is disposed so that the pin is inserted into the central hole B; and

- 10           (II-2) in a vacuum atmosphere, moving the first substrate so that the pin is inserted into the central hole A, thereby opposing the first substrate to the second substrate with the radiation curable resin interposed therebetween.

- 15     32. A method for producing an optical disk according to claim 31, wherein the pin includes a first pin that fits in the central hole A and a second pin that fits in the central hole B,

          in the process (II-1), the second substrate is fixed with the second pin, and

- 20           in the process (II-2), the first substrate is fixed with the first pin.

33. A method for producing an optical disk according to claim 32, further comprising, after the process (II-1) and before the process (II-2), lowering an upper surface of the second pin below an upper surface of the second substrate.

- 25     34. A method for producing an optical disk according to claim 32, wherein the second pin has a cylindrical shape, and the first pin is inserted into the second pin.

- 30     35. An apparatus for producing an optical disk including a first substrate in which a central hole A is formed and a second substrate in which a central hole B is formed, comprising:

35           a coating member for coating at least one substrate selected from the group consisting of the first substrate and the second substrate with radiation curable resin;

          a disposing member for disposing the first substrate and the second substrate so that a center of the first substrate is aligned with a center of the

second substrate; and

an irradiating member for irradiating the radiation curable resin with radiation.

5 36. An apparatus for producing an optical disk according to claim 35, wherein the disposing member includes a pin that fits in the first and second central holes A and B.

10 37. An apparatus for producing an optical disk according to claim 36, wherein the pin includes a first pin that fits in the central hole A and a second pin that fits in the central hole B.

15 38. An apparatus for producing an optical disk according to claim 37, wherein the second pin has a cylindrical shape, and the first pin is inserted into the second pin.

39. An apparatus for producing an optical disk according to claim 35, wherein the disposing member includes a table for fixing the at least one substrate.

20 40. An apparatus for producing an optical disk according to claim 39, wherein the disposing member further includes a container surrounding the table and an exhaust member for exhausting the container.